

## Description

# *PIVOTING FIFTH WHEEL HITCH TRAILER PIN ASSEMBLY*

### CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the priority benefit of Canadian Patent Application No. 2,392,663 filed on July 12, 2002 and entitled Pivoting Fifth Wheel Hitch Trailer Pin Assembly.

### BACKGROUND OF INVENTION

[0002] The invention pertains to trailer hitches and more particularly to fifth wheel trailer hitches. More specifically, the invention relates to trailer pin assembly portion of a fifth wheel hitching system.

[0003] Fifth wheel trailer hitches have long been used to connect the tractors of semitruck combinations, or smaller trucks, to a trailer. Commonly a fifth wheel trailer hitch system consists of a fifth wheel locking assembly which is mounted on the truck and a fifth wheel trailer pin assembly which is mounted on the trailer.

[0004] Conventional fifth wheel trailer pin assemblies consist of a kingpin and skid plate, which are attached to the trailer. When the kingpin enters a jawslot in a fifth wheel locking assembly the locking assembly firmly closes on the kingpin, thus mating the trailer pin assembly and the locking assembly into the complete fifth wheel trailer hitch system.

[0005] A problem suffered by conventional fifth wheel hitching systems is that there is no horizontal flex for accommodating siderocking movement about the axis which generally extends from the front of the towing vehicle to the rear of the trailer. Therefore it can be very difficult to couple, or uncouple, the towing vehicle and the trailer when they are at differing cants due to uneven ground. Further, undesirable forces can be transferred from the truck to the hitching system and to the trailer (and vice versa), thus increasing wear and tear on all components and increasing the likelihood of a component failure.

[0006] Previous inventors have addressed the lack of horizontal flex in conventional fifth wheel hitching assemblies by devising a fifth wheel locking assembly which is capable of pivoting horizontally as well as vertically. The difficulty with this type of solution is that the locking assembly is

the most complex part of the hitching assemble and therefore required a complex invention to add the capability of horizontal flex to the locking assembly.

#### **SUMMARY OF INVENTION**

[0007] Pivoting fifth wheel hitch trailer pin assembly invention for which this patent application is for, solves the conventional fifth wheel hitching assembly's lack of horizontal flex by having a horizontally pivoting joint in the fifth wheel trailer pin assembly. The pivoting joint allows for the kingpin of an uncoupled traileed to be easily alined with the slot in the fifth wheel locking assembly and the pivoting joint reduces the transmission of lateral forces and stress between units coupled by the hitching assembly.

[0008] The pivoting fifth wheel hitch trailer pin assembly provides a mechanically simple solution to the lack of horizontal flex problem. The simplicity of the pivoting fifth wheel hitch trailer pin assembly reduces the cost of production and reduces the number of parts which may be susceptible to structural failure.

[0009] With the pivoting fifth wheel hitch trailer pin assembly when the towing unit and the trailer unit are not connected the pivoting joint in the pivoting fifth wheel hitch

trailer pin assembly allows the kingpin to be easily aligned with the slot in the fifth wheel locking assembly, even when not on level ground. When a towing unit and a trailer unit are connected with the pivoting fifth wheel hitch trailer pin assembly, each unit is able to orientate itself with the ground without being adversely affected by the orientation of the unit to which it is coupled to.

#### **BRIEF DESCRIPTION OF DRAWINGS**

- [0010] Figure 1 shows a side view of the apparatus,
- [0011] Figure 2 shows a 50% cross sectional side view of the apparatus revealing a more detailed viewing of the pivot joint, and
- [0012] Figure 3 shows a front view of the apparatus.

#### **DETAILED DESCRIPTION**

- [0013] With reference to Figure 1, the apparatus consists of a standard collar (1) which may be attached to a trailer by a variety of existing means, a pivoting joint (2) which is the novel feature of the apparatus and provides for the horizontal flex in the trailer pin assembly, a conventional skid plate (3), and a conventional king pin (4) which is to be inserted into the locking jaws of a fifth wheel locking assembly.

[0014] As more clearly shown in Figure 3, the pivot joint consists of a cylindrical sleeve (5) which passes horizontally along the fore and aft axis through the collar (1), a bracket assembly (6) which is attached to the skid plate (3), a roller pin (7) which is inserted into the sleeve (5) and through both arms of the bracket assembly (6) and is secured in each arm of the bracket assembly by two bushing caps (8). In this shown embodiment a grease nipple (9) is provided to allow for lubrication to be inserted through a drilled passageway into the space between the sleeve (5) and the roller pin (7) which allows for the roller pin (7) to rotate within the sleeve (5), providing horizontal flex in the fifth wheel hitching system to accommodate siderocking movements and reducing the transfer of horizontal twisting forces.

[0015] Although the invention is described in terms of the illustrated embodiment, various changes and modifications may be made to the illustrated embodiment without departing from the spirit or scope of the invention.